Awardee of I2OR-Publication Excellence Award 2017

ISSN: 2250-2823

HortFlora Research Spectrum

An International Peer Reviewed JOURNAL

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NAAS Rating : 3.78

HortFlora Research Spectrum

NAAS Rating: 3.78 ***www.hortflorajournal.com*** ***ISSN: 2250-2823***

The Most Cited Journal (More than 890 citations since 2012 with i10 Index:20)

International Impact Factor: Index Copernicus Value (ICV): 27.39 (2014); Global Impact Factor (GIF): 0.471; InfoBase Index Factor (IBI): 2.8; New Journal Impact Factor (NJIF): 2.14; Global Science Citation Impact Factor (GSCIF): 0.364; OAJI-IF: 0.201

Indexed/Abstracted in:

• Indian Citation Index (ICI), New Delhi •Index Copernicus International, Poland with ICV: 27.39 (2014) • Ministry of Science & Higher Education, Poland with 02points •Global Impact Factor (GIF:0.471) •Indian Science Abstracts • CAB Abstracts • CABI Full text • CAB direct • ICRISAT-infoSAT • Google Scholar •Spice Bibliography •Indian Mango Database •InfoBase Index with IBI Factor: 2.8 •New Journal Impact Factor (NJIF): 2.14 • CiteFactor • ResearchBib • AgBiotech Net • Horticultural Science Abstracts • Forestry & Agroforestry Abstracts • Agric. Engg. Abstracts • Crop Physiology Abstracts • PGRs Abstracts •ResearchGate.net •Reference Repository •University of Washington Library • University of Ottawa Library • National Library of Sewden (LIBRIS) • getCited.com • Univ. Library of Stockhom

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Journal's International Impact
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ABSTRACTS

NAAS Rating : 3.78 www.hortflorajournal.com
HortFlora Research Spectrum, 7(1) : (March 2018) ISSN : 2250-2823

1. A Concept Note on Implementation of Plasticulture Technology in Jharkhand

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ABSTRACT : The plasticulture technology plays very important role in cultivation and post harvest management of horticultural crops. It helps in improving the crop yield and quality, growing off season crops and enhancing the shelf life of fresh and process food product. But to take the full advantage of plasticulture technology its proper implementation is very important. Here a process flow chart has been discussed to implement the various plasticulture technologies in Jharkhand such as rain water harvesting, plastic protray, low tunnel technology, drip irrigation, plastic mulching, fertigation, temporary shadenet structure, insect net proof house, multipurpose green house, detachable roof green house, shrink wrapping technology, tent type ripening chamber and medium cost protected structure.

Published in : HortFlora Research Spectrum, 7 (1) : 1-10 (March 2018)

2. Assessment of climate change In Anand of central Gujarat with reference to temperature fluctuation : A case Study

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ABSTRACT : The rainfall and temperature is the most fundamental physical parameter among the climate as it determines the environmental factors of the particular region which affect the agricultural productivity. Global warming/climate change is one of the most important worldwide issue talked among the scientists and researchers. Attempts have been made to study the temporal variations and trends in monthly, seasonal and annual temperature over Anand (middle Gujarat). Analysis has been carried for four temperature indices, namely - minimum temperature (T_{min}), maximum temperature (T_{max}), mean temperature (T_{mean}) and diurnal temperature range (DTR). Non-parametric Mann-Kendall (MK) test was used to detect the trends and the magnitude of the trends were determined with Sen's estimator of slope.The present study is the warming trends in T_{min}, T_{max} and T_{mean} temperatures and decreasing trends in DTR over City of Anand. At the site, the total numbers of statistically significant values in three temperature indices - T_{min}, T_{max} and T_{mean} are more than total numbers of non-significant values on annual, seasonal and monthly timescale.All the trend in T_{min} variable are increasing at the station on annual, seasonal and monthly scale. These increasing trends in T_{min} are significant at annual, seasonal and monthly scales over January, July August and December over Anand, it is significant at annual, seasonal (winter, monsoon, post-monsoon). In general, the magnitudes of rate of change in Tmin are higher as compared to other variables on all time scale at the station.The increasing trends in T_{max} at Anand are significant on annual scale, monsoon season as well as in February, March, May,June, August, October to December at Anand Similar to the trends observed in T_{min} and T_{max}, T_{mean} shows significant increasing trends on annual, seasonal (monsoon and post-monsoon) and monthly (except January) scale over Anand timescale.DTR shows significant decreasing trends on annual scale, winter season, post-monsoon season and in April month at Anand.

Published in : HortFlora Research Spectrum, 7 (1) : 11-18 (March 2018)

3. Off season Bottle Gourd Cultivation using Plastic Mulch and Low Tunnel

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ABSTRACT : The bottle gourd belongs to family of Cucurbitaceae and important environmental factors affecting its germination are air & soil temperature during growing season, hence it very difficult to cultivate during winter season. The seed of two varieties of bottle gourd (Tulsi and Warad) were sown under various treatment conditions i.e. open field, open field with black plastic mulch, plastic low tunnel, black plastic mulch with plastic low tunnel and transparent plastic mulch. The germination of bottle gourd varied under various treatment conditions and also affected by varieties of bottle gourd (Tulsi and Warad). The highest yield for Tulsi was found to be 49.2 t/ha under black plastic mulch with plastic low tunnel but for Warad it was found to be 64.4 t/ha under transparent plastic mulch.

Published in : HortFlora Research Spectrum, 7 (1) : 19-23 (March 2018)

4. Prospects and Retrospect for Promotion of Maps Cultivation in Bihar

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ABSTRACT : Medicinal and Aromatic plants (MAPs) contribute significantly to rural economy and health security of the country. More than 90% of the formulations under the Indian systems of medicine contain plant-based raw materials. India exports herbal materials and medicines to the tune of nearly 600 corers annually and herbal based drug industry in the country is valued more than 4000 corers annually. In Bihar, area under MAP cultivation is 2600 ha only which is far below the national average. Thus, the status of Medicinal and Aromatic Plants cultivation is still negligible in Bihar. Though commercial cultivation of *Mentha* and *Lemon grass* are picking up in the state but still a lot of efforts are required to observe the real impacts of MAPs cultivation. Presently, Medicinal and aromatic plants (MAPs) are increasingly perceived as diversification crops in Indian agriculture. Development of suitable agronomic practices for MAPs is crucial to convert these plants into economically viable components in existing cropping systems of Bihar. Therefore, it is necessary for individual state to develop agro-technologies for medicinal plants and motivate farmers towards profitable cultivation of MAP crops for their livelihood security.

Published in : HortFlora Research Spectrum, 7 (1) : 24-32 (March 2018)

5. Genetic Variability and Correlation in Chrysanthemum (*Chrysanthemum morifolium* Ramat) Genotypes

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ABSTRACT : Evaluation of diversity through genetic variability and correlation studies on vegetative and floral characters of chrysanthemumgenotypes were undertakenat experimental farm, Department of Horticulture, NEHU, Tura Campus, Tura, West Garo Hills District,Meghalaya during 2015-2017.Fifteen varieties namely, Korean Red, Korean Yellow, SolanShringar, Ramblored, Yellow Star, Calabria, Ajay, AAU Yellow, White Star, Korean Bicolour, Charming, Lysid, Safin, Shayana and Gambit were selected for their evaluation.The range of variation was high for number of leaves (38.24-125.11) followed by days to bud initiation (34.60-94.66). Highest phenotypic and genotypic variances were observed for number of leaves (699.74 and 699.70), respectively. The estimates of phenotypic coefficient of variation (PCV) were higher than genotypic coefficient of variation (GCV) for all the traits. Maximum PCV and GCV was observed for dry weight (89.73 and 89.17) followed by number of flowers per spray per plant (78.10 and 78.08).However, maximum heritability were observed in number of leaves (99.98 percent), number of flowers per spray per plant (99.98 percent) and flower longevity (99.97 percent) followed by days to bud initiation (99.95 per cent) and plant height (99.94 percent), whereas, maximum genetic advance was noticedin number of leaves (54.49). The high heritability with genetic advance as percentage of mean for number of branchesand number of flowers per spray per plant indicates the possible role of additive gene action. The magnitude of genotypic correlation was higher than their corresponding phenotypic correlation for most of the traits, indicating a strong inherent linkage between

various traits under study. At genotypic and phenotypic level, number of leaves exhibited highly significant and positive correlation with number of branches (0.889), number of flower head per plant (0.498), number of sprays per plant (0.497) and number of flowers per spray per plant (0.419), while, vase life showed significant and positive correlation with number of flower head per plant (0.315), number of sprays per plant (0.339) and flower diameter (0.311).

Published in : HortFlora Research Spectrum, 7 (1) : 33-40 (March 2018)

6. Study on Combustion Behaviours of Briquette Fuel Produced from Crop Residues

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ABSTRACT : This study examines the effect of combustion properties of briquettes produced from different crop residues. The densification of biomass changes the combustion characteristics, in view of that the system was designed to determined combustion characteristics of different crop residues briquette using a specially design combustion chamber. In this experiments air is blown around the combustion chamber. The maximum specific rate of combustion achieved 92.8kg/h-m^2 with airflow rate 63. 6m^3/h. The higher biomass consumption was observed that mix briquette 17.7 kg/h. with air flow rate 63.6 m^3/h. The result indicates that as the airflow rate increase, the rate combustion and temperature of combustion both increase simultaneously. Oxidation temperature and flame temperature in the combustion chamber as depend on a function of airflow rate.

Published in : HortFlora Research Spectrum, 7 (1) : 41-46 (March 2018)

7. Genetic Diversity of Wild landraces of Bael for Rootstock Purpose in South Eastern Rajasthan

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ABSTRACT : The present investigations were carried out in Department of Fruit Science, College of Horticulture and Forestry, Jhalawar during 2010-2011 to assess morphometric variations and genetic variability in bael fruits grown in Hadoti region to explore the possibility for using them as rootstock under high rainfall conditions of Hadoti region. Morphometric studies revealed that fruit weight ranged from minimum from 57.95g in T_6 landrace to maximum 1068.66g in T_3 landrace; fruit length ranged from minimum (4.64 cm) in T_6 landrace to maximum (12.35 cm) in T_3 landrace; fruit width ranged from minimum (5.06 cm) in T_6 landrace to maximum (12.19 cm) in T_3 landrace; number of seeds/fruit varied from minimum (62.66) in T_6 landrace to maximum 305.33 in T_{14} landrace; skull thickness ranged from minimum (2.83 mm) in T_{15} landrace to maximum (6.32 mm) in T_3 landrace; Based on fruit shape, six landraces T_1, T_2, T_3, T_5, T_8, T_9 and T_{11} showed obovate shape; T_4 landrace exhibited elliptical shape; six landraces T_6, T_7, T_{12}, T_{13}, T_{14} and T_{15} showed round shape and T_{10} landrace exhibited oblong fruit shape. Pulp weight ranged from minimum (16.34 g) in T_6 landrace to maximum (469.52 g) in T_3 landrace; however pulp percentage ranged from minimum (22.41%) in T_8 landrace to maximum (49.23%) in T_2 landrace. Data on biochemical analysis revealed significant diversity among all landraces studied. TSS content was found maximum in T_7 landrace; ascorbic acid content was estimated maximum in T_3 landrace. The fruits of T_7 landrace exhibited lowest acidity value.

Published in : HortFlora Research Spectrum, 7 (1) : 47-51 (March 2018)

8. Studies on Foliar Application of Boron and GA_3 on Physico-chemical Composition and Yield of Phalsa (*Grewia subinaequalis* D.C.)

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ABSTRACT : A field experiment was conducted to investigated the effect of foliar application of boron and GA_3 on the physico-chemical composition, yield and cost benefit ratio of phalsa. The trial was undertaken at the Horticulture Garden of Department of Horticulture, Chandra Shekhar Azad University of Agriculture and

Technology, Kanpur during 2015-16 and 2016-17. There were 4 levels each of boron and GA_3 i.e. 0, 30, 40, 50 ppm and 0, 10, 20, 30 ppm, respectively tried in a Factorial Randomized Block Design replicating thrice. First foliar application of the respective treatments was given when the flower buds were fully swollen and it was super imposed after three weeks. Observations were recorded on juice content, T.S.S., ascorbic acid, acidity and yield. Boron and GA_3 in increasing concentration increased all the attributes profoundly barring acidity content. Foliar application of boron at 50 ppm improved the above attributes significantly expressing 50.59, 49.87% juice, 19.58, 19.770 Brix T.S.S., 30.95, 31.33 mg/100g ascorbic acid and 56.72, 59.88q/ha fruit yield against the minimum of 44.89, 44.92%; 17.89, 18.06° Brix; 27.21, 27.53mg/100g and 46.76, 49.17 q/ha registered under control (B_0). GA_3 treatments also proved profoundly effective in increasing the above parameters and application of 30 ppm recorded 51.25, 51.28% juice, 19.94, 20.13° Brix T.S.S., 30.42, 30.81 mg/100g ascorbic acid and 59.88, 63.27 q/ha fruit yield against 44.78, 44.06%; 17.70, 17.87° Brix; 28.06, 28.38mg/100g and 39.35, 41.21 q/ha values respectively under control. 50 ppm Boron or 30 ppm GA_3 produced less acidic fruits recording 1.450, 1.540% and 1.375, 1.440% acidity content against phalsa bushes deprived of foliar sprays of boron or GA_3 (producing most acidic fruits) revealing 1.662, 1.160% and 1.830, 1.860% during corresponding years. It is obviously observed that cost benefit ratio increased progressively in increasing levels of boron and GA_3. The cost benefit ratio was calculated on average data of 2015-16 and 2016-17. In this regard the maximum levels of boron (50 ppm), GA_3 (30 ppm) and their interaction (B_3G_3) recorded 2.13, 2.34 and 2.63 cost benefit ratio and their control exhibited 1.68, 1.38 and 1.21 ratio, respectively.

Published in : HortFlora Research Spectrum, 7 (1) : 52-57 (March 2018)

9. Estimation of Colchicine in Cell Suspension Cultures of *Gloriosa superba* L.

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ABSTRACT : Callus was induced from different explants of *Gloriosa superba* L on MS medium supplemented with different concentrations of 2,4- D. Cell suspension cultures derived from callus of Gloriosa superba L. were established quantified for the colchicine content using High Performance Liquid Chromatography. Effect of time on the growth of cells and colchicine production by cell suspension cultures in liquid medium was also studied. Maximum growth index (0.331 ± 0.0016) was obtained after four weeks of cell growth. Itt was observed that the colchicine yield reached 13.33 ± 0.024 µg/g dry wt. in cells and 59.30 ± 0.54 µg/l in residual liquid medium after four weeks of culture in liquid growth medium and thereafter there was reduction in biomass as well as colchicine content.

Published in : HortFlora Research Spectrum, 7 (1) : 58-61 (March 2018)

10. Variation and Association Analysis for Yield and Horticultural Traits in Cucumber (*Cucumis sativus* L.)

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ABSTRACT : Performance of 26 indigenous/ exotic genotypes of cucumber was studied during *Kharif,* in randomized block design with 3 replications at Nauni (Solan). Significant differences among the genotypes were observed for all the traits under study, indicating the existence of considerable variability. A large portion of phenotypic variability was observed to be genetic and highly heritable in all the traits except for primary branches per vine. High heritability estimates accompanied with high genetic gain for yield per plant, sex ratio, node of first female flower and vine length indicated additive gene control for inheritance of these traits. Yield per plant had significant and positive association with fruits per plant and primary branched per plant. The traits *viz.* fruits per plant, fruit weight and fruit length contributed towards yield directly/ indirectly.

Published in : HortFlora Research Spectrum, 7 (1) : 62-66 (March 2018)

11. Yield and Yield Attributes of Tomato (*Lycopersicon esculentum* MILL.) as Influenced by Integrated Nutrients Management for Sustainable Production

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ABSTRACT : A field experiment with eleven treatments including control was conducted at the Rajola Farm of the Faculty of Agricultural Sciences, MGCGV, Chitrakoot – Satna (MP), during the Kharif season of 2009 to find out the most appropriate integrated nutrient management system for sustainable tomato production. The best treatment comprising of organic manures (FYM and Vermicompost), inorganic fertilizers (N, P and K), and plant growth regulator GA_3 on growth and yield of Tomato, for this region. It was found that application of T_9 100% RDF + VC 10 t ha^{-1} + Seedling treatment with GA_3 100 ppm gave fruit yield (49.79 t ha^{-1}) over control (10.00 t ha^{-1}) which was significantly higher over all the treatments. The organic sources of nutrition along with inorganic sources showed incremental effect for almost all parameters including yield over inorganic sources alone.

Published in : HortFlora Research Spectrum, 7 (1) : 67-69 (March 2018)

12. Effect of Bio-Fertilizers on Yield and Quality Parameters of Cauliflower (*Brassica oleracea* L. var. botrytis) cv. Pusa Snowball K-1

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ABSTRACT : The present study examined the effect of bio-fertilizers on growth of cauliflower (*Brassica oleracea* L. var. *botrytis*) cv. Pusa Snowball K-1. The study was conducted during Rabi 2015-2016 at Horticulture Research Farm, Department of Horticulture, Babasaheb Bhimrao Ambedkar University, Lucknow, Uttar Pradesh. The treatment combination of bio-fertilizers was studied with different doses as T_1 (Control), T_2 (FYM, 20 t/ha.), T_2 (Vermicompost, 5 t/ha.), T_4 (*Azotobacter*, 2 kg/ha.), T_5 (PSB, 2 kg/ha.), T_6 (Neem Cake, 10 t/ha.), T_7 (FYM + Vermicompost, 5 t/ha.), T_8 (FYM + *Azotobacter*), T_9 (FYM + PSB), T_{10} (FYM + Neem Cake), T_{11} (FYM + Vermicompost + *Azotobacter*) and T_{12} (FYM + Vermicompost +*Azotobacter* + PSB). Cauliflower growth including yield and quality parameters i.e. curd weight (g), curd diameter (cm), length of stalk (cm), yield per plot (kg) , yield (q/ha) ascorbic acid and acidity respectively. Significant differences were observed for all the above mentioned parameters across the biofertilizer doses in cauliflower under Lucknow conditions.

Published in : HortFlora Research Spectrum, 7 (1) : 70-73 (March 2018)

13. Correlation and Path Analysis in Sponge Gourd (*Luffa cylindrica Roem*)"

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ABSTRACT : Correlation and path analysis were carried out in order to quantify the contribution of explanatory characters towards yield for sponge gourd cultivation. The characters like number of fruits per plant and average fruit weight has significant and positive correlation with yield. Average fruit weight had the highest positive direct effect on fruit yield per plant.

Published in : HortFlora Research Spectrum, 7 (1) : 74-77 (March 2018)

14. Effect of Different Media, pH and Temperature on Growth and Sporulation of Curvularia Leaf Spot of Brinjal [*Solonum melongena* (L)].

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ABSTRACT : Curvularia leaf spot of brinjal (*Solonum melongena.*) was grown on nine different solid media to observed the redial growth of the test fungus. Potato Dextrose Agar medium, favored the maximum growth and lowest growth was recorded on Asthana and Howker's medium. The temperature requirement of the pathogen was investigated on Potato Dextrose Agar medium, in the range of 8°C to 45°C. The fungus exhibited maximum growth at a wide range of pH from 3.5 to 9.0, and best fungal growth was recorded at 6.5 and poor growth was observed at pH 3.5.

Published in : HortFlora Research Spectrum, 7 (1) : 78-80 (March 2018)

15. Efficacy of Indoxacarb and Combinations with Cypermethrin for Management of *Earias vittella* of Okra

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ABSTRACT : The study was carried out to determine the efficacy of two insecticides viz., Indoxacarb, Cypermethrin, and their mixtures against shoot and fruit borer Earias spp. on okra variety Arka Anamika. These insecticides were tested for the control of shoot and fruit borer, E. spp. in Kharif season okra crop. Among various treatment Indoxacarb10EC+Cypermethrin10EC @100+100 g a.i./ha was found significantly superior over rest of treatment in controlling fruit damage. The next best effective treatment was Indoxacarb 10EC+Cypermethrin10EC @ 75+75g *a.i.*/ha and Indoxacarb10EC+ Cypermethrin 10 EC @ 50+50g *a.i.*/ha. also effective and provided protection against fruit borer during Kharif. Significantly maximum yield of marketable okra was recorded from the plot sprayed with Indoxacarb 10EC+Cypermethrin10EC 17.15 q/ha.

Published in : HortFlora Research Spectrum, 7 (1) : 81-83 (March 2018)

ICV : 27.39 | **HORTFLORA RESEARCH SPECTRUM** | GIF : 0.471

IBIF : 2.8 | **NAAS Rating : 3.78** | PIF : 4.079

www.hortflorajournal.com **ISSN : 2250-2823**

Published under the Auspices of :

Biosciences and Agriculture Advancement Society (BAAS)

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Journal's International Impact
Index Copernicus Value (ICV) : 27.39; Global Impact Factor (GIF) : 0.471;
InfoBase Index Factor (IBI Factor) : 2.8; New Journal Impact Factor (NJIF) : 2.14

ABSTRACTS

NAAS Rating : 3.78 www.hortflorajournal.com
HortFlora Research Spectrum, 7(2) : (June 2018) ISSN : 2250-2823

1. Enhancing Shelf life of food commodities: A review on role of Nanotechnology

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ABSTRACT : The growing demand for healthy and safe food, strategy against an increasing risk of biotic factors such as disease, and threats to agricultural and food productivity due to changing climatic conditions and human interventions has created a strong demand for emergence of an alternative technology which promises solution to these problems. Nanotechnology is a promising field of interdisciplinary research and works with the smallest possible particles which raise hopes for improving methods of food preservation and processing by encountering problems unsolved conventionally. This review discusses the potential of nanotechnology for their uses in the food industry in order to provide consumers a safe and contamination free food with extended shelf life.

Published in : HortFlora Research Spectrum, 7 (2) : 85-97 (June 2018)

2. Effect of Nitrogen, Phosphorus and Potassium on Growth and Yield of Arvi (*Colocasia esculenta* L.) cv. Vallabh Hans

Abdul Qayum Omid, Manoj Kumar Singh, Bijendra Singh, Mukesh Kumar, S.P. Singh, Satya Prakash, Sunil Malik, Jagraj Singh, K. P. Singh and S. K. Tripathi*
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ABSTRACT : An investigation entitled "Effect of nitrogen, phosphorus and potassium on growth and yield of Arvi (*Colocasia esculenta* L.)" was carried out at Horticulture Research Centre of Sardar Vallabhbhai Patel University of Agriculture and Technology, Meerut during 2017-18 in Randomized Block Design (RBD) with three replications. Total ten treatment *viz.* T_1- NPK 60:30:80 kg ha^{-1},T_2- NPK 60 :60:120 kg ha^{-1}, T_3-NPK 60 :90:160 kg ha^{-1} , T_4- NPK 90:30:80 kg ha^{-1}, T_5-NPK 90:60:120 kg ha^{-1}, T_6-NPK 90:90:160 kg ha^{-1}, T_7-NPK 120:30:80 kg ha^{-1}, T_8-NPK 120:60:120 kg ha^{-1}, T_9-NPK 120:90:160 kg ha^{-1} and T_{10}- Control were tried to assess the impact of nitrogen, phosphorous and potassium on growth and yield of colocasia during investigation. Out of these, the treatment with NPK 120:30:80 was found significantly superior in terms of plant height (cm.), plant spread (cm), number of leaves plant^{-1}, number of tillers plant^{-1}, girth of pseudostem from ground level (cm) , length of leaf (cm), width of leaf (cm), petiole length (cm) and petiole breadth (cm). Similarly, yield and yield attributing parameters *i.e.,* number of corms plant^{-1} , corm length (cm), corm girth (cm), weight of corm (g), corm yield plant^{-1} (g), and corm yield (q ha^{-1}) were found significantly superior with the application of NPK 120:30:80 as compared to control and other treatments. Finally, a dose of NPK @ 120:30:80 kg ha^{-1} gave the highest yield of corm *i.e.,* 289.83 q ha^{-1}, whereas lowest yield of corm *i.e.,* 92.25 q ha^{-1} was observed under control during the cropping period.

Published in : HortFlora Research Spectrum, 7 (2) : 98-103 (June 2018)

3. Economics of Tomato Fertigation for Major Nutrients

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ABSTRACT : The fertigation plays very important role in successful cultivation of horticultural crops and enhance yield & minimize environmental pollution. The fertilizer use efficiency of N, P & K increased under fertigation in comparison to conventional fertilizer application with surface irrigation. The economics of tomato fertigation for major nutrients (N, P & K) for recommended dose of fertilizer N: P: K: : 111:67:133 kg/ha is calculated for various treatments *i.e.,* T_1 (conventional fertilizer application), T_2 (N through fertigation and P & K through conventional fertilizer application), T_3 (N & P through fertigation and K through conventional fertilizer application), T_4 (N & K through fertigation and P through conventional fertilizer application) and T_5 (N, P, & K through fertigation). The fertilizer cost for various treatment conditions varies between around Rs. 8418 to 42, 703 for different fertilizer sources conventional and water soluble considered in this study.

Published in : HortFlora Research Spectrum, 7 (2) : 104-108 (June 2018)

4. Study on Genetic Variability, Heritability, Genetic Advance and Character Association in Tuberose (*Polianthes tuberosa* L.) Genoypes

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ABSTRACT : The present study consists of twenty one tuberose genotypes to find out the estimates of genetic variability, heritability, genetic advance and character association. The phenotypic coefficient of variation was found to be higher than their corresponding genotypic coefficient of variation for all the characters. The high genotypic coefficient variation (GCV) and phenotypic coefficient variation (PCV) magnitude was observed for yield of bulb per plant (gm), yield of bulb (q/ha), concrete (%), absolute (%) and weight of bulbs (gm). High heritability coupled with high genetic advance as percent of mean was recorded for number of leaves per plant, vase life (days), numbers of bulbs per plant, yield of bulb per plant (gm) and yield of bulb (q/ha), weight of bulb (gm), concrete and absolute indicating that genetic control in the inheritance of these traits and selection pressure could be profitably applied on these characters for yield improvement. Phenotypic correlations were of higher magnitude as compare to their corresponding genotypic correlation in most of the attribute combination which indicated that existence of strong influence of environmental factor for the various characters. Yield of bulb showed significant and positive correlation with days to taken to sprout, plant height, length of longest leaf, days required for visibility of first spike, number of floret per spike, diameter of floret, length of spike, number of bulbs per plant, yield of bulb per plant and diameter of bulb at genotypic level and phenotypic level yield of bulb exhibited positive significant association with days to taken to sprout, plant height, number of floret per spike, length of spike, number of bulbs per plant, yield of bulb per plant and diameter of bulb. Thus, it can be inferred that selection based on any one of these characters either alone or in combination, will result in identifying high yielding strains in tuberose crop.

Published in : HortFlora Research Spectrum, 7 (2) : 109-114 (June 2018)

5. Impact of Foliar Feeding of $Ca(NO_3)_2$ on Plant Growth and Leaf Nutrients of Strawberry (*Fragaria* × *ananassa* Duch.) cv. Winter Dawn

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ABSTRACT : The objective of present investigation was to compare the effect of foliar application of $Ca(NO_3)_2$ (0.2, 0.4, 0.6, 0.8 percent) applied at 60, 75 and 90 days after transplanting (DAT) on vegetative growth and leaf nutrients content with the control (water spray) of strawberry cultivar 'Winter Dawn'. The experiment was laid out in Randomized Block Design (RBD) and replicated four times. Triple applications of $Ca(NO_3)_2$ at different concentrations improved plant growth related parameters viz. plant spread (N-S, 202.0 to 223.8 mm and E-W, 213.3 to 230.3 mm), number of leaves/plant (21.6 to 29.8), crown length (23.6 to 26.1 mm), crown diameter (28.7 to 35.2 mm), plant fresh weight (22.5 to 33.4g), plant dry weight (7.5 to 10.6g), root fresh weight (3.6 to 5.1g), root dry weight (1.47 to 2.12g), root length (120.7 to 174.0 mm), leaf area index (0.45 to 0.6) and leaf chlorophyll content (45.6 to 53.5) over the control (193.1 mm, 196.4 mm, 19.5, 22.1 mm, 26.9 mm, 20.3 g,

7.1 g, 3.4 g, 1.43 g, 117.9 mm, 0.42 and 44.5, respectively). Foliar feeding with Ca compounds also considerably enhanced leaf N, P, K, Ca, Mg, Cu, Zn, Fe and Mn content and the values ranged from 2.31 to 2.40%, 0.23 to 0.26%, 1.14 to 1.32%, 0.85 to 1.02%, 0.51 to 0.76%, 17.5 to 25.4 ppm, 27.4 to 38.4 ppm, 83.7 to 107.4 ppm and 53.5 to 55.3 ppm, respectively. It is concluded that triple sprays of $Ca(NO_3)_2$ @ 0.4 per cent appreciably enhanced vegetative growth characters and substantially leaf N and Ca contents over the control.

Published in : HortFlora Research Spectrum, 7 (2) : 115-120 (June 2018)

6. Cultivation, Production and Utilization of *Aloe* –A Wonder Plant in Mid-Hill Conditions of Himachal Pradesh

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ABSTRACT : *Aloe barbedensis* Miller or *Aloe vera* Linn. is a succulent plant of family Liliaceae with its origin in African continent. Ancient records show that the benefits of Aloe Vera have been known for centuries with its therapeutic advantages and healing properties. Many ancient works including the Bible refer to the use of Aloe. It is grown in many parts of the world with warm climate. It grows mainly in the dry region of Africa, Asia, Europe and America. In India it is found in Rajasthan, Andhra Pradesh, Gujarat, Maharashtra and Tamil Nadu. Its uses are multiple and undoubtedly the nature's gift to humanity. It is commonly known as "Ghrit Kumari". Its leaves have a high capacity of retaining water even in warm and dry climates and therefore this plant can survive for longer period of drought and harsh circumstances where most of the vegetations disappear. When a leaf is cut, a yellow-orange coloured sap drips from the open end; as a drink this bitter sap has a very strong laxative effect. A "stabilized" product is incorporated in a wide variety of preparations of commerce.

Published in : HortFlora Research Spectrum, 7 (2) : 121-125 (June 2018)

7. Effect of different concentrations of custard apple pulp on the properties of ice cream

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ABSTRACT : An experiment was conducted at P.G. laboratory, Department of Horticulture, Junagadh Agricultural University, Junagadh (Gujarat) during the year 2014 to study the physical, chemical and sensory properties of custard apple pulp ice cream. Treatments comprised with 5, 10, 15, 20, 25 and 30% custard apple pulp were used to prepare ice cream. The experiment was designed in Completely Randomized Design (CRD) with three replications. Ice cream with custard apple pulp was kept at -35-38°C in deep freezer. Ice cream was analyzed for physico-chemical, bio-chemical and sensory characteristics at 0, 10, 15, 30, 45 and 60 days of storage. Lowest acidity, highest pH, time taken for melting and protein content were recorded in treatment with 5% custard apple pulp (T_1) followed by 10% custard apple pulp (T_2). Similarly, better response in ascorbic acid and lower fat content was noted in 30% custard apple pulp (T_6), but was found at par with 25% custard apple pulp (T5), whereas highest carbohydrates was noted in treatment with 25% custard apple pulp (T_5). In organoleptic evaluation, the highest score of colour, texture, flavor, taste, overall acceptability and palatability were recorded in the ice cream with 15% custard apple pulp. There was a progressive deterioration in all sensory parameters during storage.

Published in : HortFlora Research Spectrum, 7 (2) : 126-132 (June 2018)

8. Crop improvement studies in Custard apple cultivars

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ABSTRACT : The present investigations were carried out in Fruit Science Department under aegis of All India Coordinated Research Project on Arid Zone Fruits at College of Horticulture and Forestry, Jhalawar on new established orchard during 2010 to evaluate the four different custard apple cultivars collected from different horticultural institutes of the country. The fruit quality characteristics during first bearing (2016) revealed that maximum fruit weight (169.38g), pulp wt. (68.27g), pulp % (40.71) was observed in Balanagar cultivar, however maximum TSS (35.73°brix), higher yield/plant (3.81kg), less no. of seeds (24.80) and less seed weight/ fruit (6.63) was estimated in Raydurg cultivar. The quality attributes of cvs. Balanagar and Raydurg were found at par with each other and were found superior over Ramsita and APK (Ca-1) cultivars during first bearing. The evaluation of custard apple fruit quality during second bearing (2017) revealed that maximum average fruit weight (224.34g), pulp weight (100.03g), pulp % (44.54) and yield/plant (5.60kg) was recorded in Balanagar cultivar, however maximum TSS (32.88obrix), less number of seeds (27.80), less seed weight/fruit (7.35g) was estimated in Balanagar cultivar and were found higher over Ramsita and APK (Ca-1) cultivars. The genetic studies revealed high heritability values for fruit weight (148.79), pulp weight (149.29), pulp percentage (149.05), number of seeds/fruit (148.41), seed weight/fruit (149.87), TSS content (148.41) and fruit yield/plant (147.89) among custard apple cultivars. The present studies determines that Balanagar and Raydurg cultivars have shown promise under heavy black soils of Jhalawar district and holds potential for this crop in subhumid climate having good average annual rainfall (750mm).

Published in : HortFlora Research Spectrum, 7 (2) : 133-136 (June 2018)

9. Impact of Organic Manures and Biofertilizers on the Performance of Radish (*Raphanus sativus* L.)

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ABSTRACT : A field experiment was conducted to examine the impact of organic manures and biofertilizers on the vegetative and yield behaviour of radish during 2016-17 at the Horticultural Research Farm, Department of Horticulture, Chaudhary Charan Singh University Campus, Meerut (U.P). The experimental field was laid out in randomized block design (RBD) with three replications. The experiment comprised of nine treatments consisting of different organic manures and biofertilizers. All variables parameters regarding vegetative and yield behaviour were significantly influenced by organic manures and biofertilizers. Results indicated that combined application of organic manure and biofertilizer *i.e.* Vermicompost @ 2.5 tonnes/ha + *Azotobacter* @ 2.5 kg/ha (T_8) gave the better effect on vegetative and yield parameters viz., plant height (33.88 cm), number of leaves per plant (26.21), leaf width (10.70 cm), root length (23.33 cm), root diameter (4.88 cm), root weight (179.52 g) and yield (394.94 q/ha) as compared to other treatments.

Published in : HortFlora Research Spectrum, 7 (2) : 137-140 (June 2018)

10. Technology transfer to farmers and its impact on their livelihood

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ABSTRACT : The present study was focused on technology transfer to farmers by Krishi Vigyan Kendra Ferozepur and their impact on self employment and up gradation of their livelihoods. Krishi Vigyan Kendra Ferozepur had conducted vocational/short term trainings for rural youth/farmers and extension functionaries on cultivation of button and dhingri mushroom, bee keeping, dairy farming, preservation of fruits and vegetable, protected vegetable cultivation. A total of 167 trainees were selected as the respondents of the trainings. The findings revealed that more than 41.31% respondents were belonging to 30-40 years age group and about 67.66 per cent respondents were educated. Half of the respondents were belong to schedule caste families and landless. About 27.1 per cent of the trainees had training on bee keeping, 24.9 per cent on dairy farming, and 23.3 per cent on cultivation of button and dhingri mushroom, 15.0 per cent of the trainees received training on preservation of fruits and vegetable. Majority of the trainees had adopted the skills on self sustainable level/household level with highest adoption in cultivation of button and dhingri mushroom (69.0%), 58% in bee keeping followed by 36.0 % in dairy farming, 20% in fruits and vegetable preservation. The number of adoption of protected vegetable cultivation was lowest but found highest adoption at commercial level. Economic impact of trainings at self sustainable level/household level is quite visible in terms of income generation as trainees had started and adopted skills as subsidiary or main occupation.

Published in : HortFlora Research Spectrum, 7 (2) : 141-144 (June 2018)

11. Cytotoxic effects of Some Biopesticides on *Vicia faba* (Broad Beans)

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ABSTRACT : The aim of this investigation was to find out the effects of some biopesticides (*Trichoderma* and Neem) at different concentrations on mitotic index and mitotic aberrations on *Vicia faba* L. plants. The poisonous effects of some chemicals used for agriculture practices and responsible for increasing the environmental pollution which is a recent worldwide problem. So that several experiment were taken to find out poisonous activity of chemicals /natural compounds for more ecological safety. Effect of different concentration of biopesticides that is 150ppm, 300ppm, 550ppm and 800ppm for 8 hrs has been observed. The mitotic index decreases due exposure to plant extract in higher concentration and longer duration period. The mitotic index decreases due exposure to Trichoderma solution in higher concentration and longer duration period. The mitotic index is minimum at 800ppm concentration of *Trichoderma* (solution) for 8 hrs that is 17.81 which is lower from control that is 22.11.The antimitotic effect was in low frequency at 300 ppm of for,8 hrs was 21.89,21.06, 20.95 respectively. While neem was less effective than Trichoderma by showing less reduction in MI that is at 800ppm MI is 20.6 which is lower than MI in control.

Published in : HortFlora Research Spectrum, 7 (2) : 145-148 (June 2018)

12. Population Dynamics of Some Plant Parasitic Nematodes in the Rhizosphere of Tuberose and Marigold

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ABSTRACT : Population dynamics of some plant parasitic nematodes in the rhizosphere of tuberose and marigold crops were studied. Population density was recorded at monthly interval from May, 2016 to February, 2017 in tuberose and from June, 2016 to November, 2016 in marigold. High population density (>200 nematodes / 200 cc soil) of root-knot nematode, *Meloidogyne incognita* and reniform nematode, *Rotylenchulus* spp. was recorded in tuberose from July, 2016 to November, 2016. Population dynamics of other nematodes such as *Pratylenchus* spp. and ectoparasitic nematodes were also recorded in the rhizosphere of tuberose crop. In marigold, population density of plant parasitic nematodes such as *Pratylenchus* spp., *Hoplolaimus* spp., *Helicotylenchus* spp., *Tylenchorhynchus* spp. and *Longidorus* spp. were decreased when marigold cultivars Pusa Narangi Gainda and Pusa Basanti Gainda were grown in sequence on the same field. However, these marigold cultivars did not influence the population density of *Xiphinema* spp.

Published in : HortFlora Research Spectrum, 7 (2) : 149-151 (June 2018)

13. Impact Assessment of Factors affecting Sensory Quality of Kinnow Mandarin

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ABSTRACT : Different fruit juice blends were prepared as (Kinnow juice: Aonla juice: Ginger juice in 100: 0: 0, 95: 5: 0, 92: 5: 3 ratio for improving flavour, palatability, nutritive and medicinal value. The juice blends were preserved by pasteurization (75°C or 85°C for 15 minutes) and by addition of potassium meta-bi-sulphite (500 or 750 ppm). These blends were stored in 200 ml colourless glass bottles at refrigerated condition (4 ± 1°C) for six months and tested at three months interval for sensory evaluation. The results revealed that non-enzymatic browning, flavour, colour, bitterness and affected significantly up to sixth month of storage. The individual effect of juice blending ratio, processing temperature and potassium meta-bi-sulphite treatment was found to be significant in prolonging storage duration and maintaining the acceptable quality of juice blends. The juice blend by 92:5:3, processed at 75°C for 15 min with 750 ppm KMS was the most effective treatment for sensory quality of the juice blend but minimum microbial population was recorded with juice processed at 85°C temperature with same treatment combination in both year of experimentation.

Published in : HortFlora Research Spectrum, 7 (2) : 152-154 (June 2018)

14. Climatic Requirement of Medicinal Plants, their Utilization and Cultural Technology

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ABSTRACT : In spite of rich heritage of knowledge on the use of herbal drugs, due attention has not been paid to grow these medicinal plants, systematically as field crops. Over 60% of all pharmaceuticals are plant based. Plant growth and development are primarily governed by environmental conditions of the soil and climate. The success or failure of crop growing is intimately related to prevailing weather conditions. As per composition of plant metabolites, medicinal plants have been grouped as alkaloids including morphine (poppy), strychnine and brucine (nuxvomica), quinine (cinchona), ergotarnine (ergot), hyociamine (belladona), scolapormine (datura), emetine (ipecae), reserpine (rauvolfia), cocaine (coco), aconitine (aconite), lobelin (lobelia) etc.. Soil and climatic requirement of some of the important medicinal plants is discussed hereunder along with their utilization and brief cultural technology so that it may be popularized and progressive growers may take up its cultivation and the supply of raw material is enhanced to the pharmaceutical industries.

Published in : HortFlora Research Spectrum, 7 (2) : 155-158 (June 2018)

15. Effect of Cattle Urine on Tomato Crop

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ABSTRACT : Nepal is a mountainous country having an area of 1, 47,181 square kilometer with predominantly an integrated agriculture practice. Realizing the possibilities of cattle excreta for agro-production this experiment is design to compare the production of tomato in application of cattle Urine with different dilution level. Experimental plots were categorized into three types, a Common farmer practice plot, Treatment (with different dilutions of cows urine) plots and Chemical used plots. Tomato production analysis was done with three replications. Urine water dilution level of 1:2, 1:4, 1:6, 1:8, and 1:10 is sprayed in the plots. Plants height and yield was measured, soil sampling and NPK in Urine was analyzed, and disease and infestations are observed finally Cost- Benefit analyses are done. The most recommendable urine water dilution level for higher yield of tomato production from this research is found as 1:8.

Published in : HortFlora Research Spectrum, 7 (2) : 159-161 (June 2018)

16. Effect of Organic Manures on Growth Parameters and Chlorophyll Content in Jalneem (*Bacopa monnieri* L.) grown under mid hill conditions of Himachal Pradesh

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ABSTRACT : An experiment was conducted in Complete Randomized Block Design with three replications along with nine treatments *i.e.* T_1 - Absolute control (Soil: Sand::1:1), T_2 - T_1 + (N 100 kg/ha + P_2O_5 60 kg/ha + K_2O 60 kg/ha), T_3-T_1 + FYM (2.0 : 1), T_4-T_1+ VC (2.0 :1), T_5-T_1 + BG (2.9 :0.1) , T_6-T_1+FYM+VC(2.0 :0.5 :0.5), T_7 - T_1 + FYM + BG (2.0 :0.9 :0.1), T_8-T_1 + VC + BG (2.0 :0.9 :0.1), T_9-T_1 + FYM + VC + BG (2.0 :0.45 :0.45 :0.1). The pots were prepared by filling the mixture of soil and sand in equal proportion while Vermicompost, FYM and biozyme granules were added depending upon proportion in various treatment. All growth parameters *i.e.,* plant height, number of branches, number of nodes, number of leaves and leaf area as well as biochemical constituent (Chlorophyll content) were recorded at various growth stages of *Bacopa*. The significant variations were recorded in growth parameters. Leaf area increased in all the treatments with time till flowering stage and declined further at the time of harvest. Chlorophyll contents also increased up to flowering stage and after that showed a decrease at harvest stage.

Published in : HortFlora Research Spectrum, 7 (2) : 162-164 (June 2018)

17. Assessment of Vegetative growth as influenced by different depth of planting and Spacing in Tuberose (*Polianthes tuberosa* Linn.) cv. Double

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ABSTRACT : A field trial consisting of three different planting depth (4.5, 5.5 and 6.5 cm) and two spacing (10 x 20 and 20 × 20 cm) was carried out Research Farm, under Crop Cafetaria Unit, Krishi Vigyan Kendra, Hastinapur, SVP University of Agriculture & Technology, Meerut (UP) India during the year 2014-15 and 2015-16. To assess the performance of these depths of planting and different spacing for improving the yield of tuberose. Only one cultivar applied namely Vaibhav were performed in a Randomized Complete Block Design (RCBD) with three replications. Maximum number of sprouts (4.53 and 6.16), number of leaves (27.32 and 42.56,), length of longest leaf (53.15 and 59.42) and height of plant (44.62 and 51.47) at 65 and 85 days after planting were found under the treatment D_1, where the bulbs were planted at the depth of 4.5 cm. Wider spacing (20 × 20 cm) produced maximum number of sprouts (3.63 and 4.56) and highest number of leaves per plant (22.11 and 39.77). Spacing had no significant effect on length of longest leaf and height of plant. Therefore 4.5 cm depth of planting and 20 × 20 cm (S_2) spacing may be the recommended for better vegetative growth of tuberose especially double cultivar of Vaibhav.

Published in : HortFlora Research Spectrum, 7 (2) : 165-167 (June 2018)

18. Response of spraying of urea and di-potassium phosphate on floral parameters and floret production of Gladiolus

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ABSTRACT : The study was laid out with the main objective to find out the effect of urea and KH_2PO_4 applied through foliar spray on floral parameters and floret production of gladiolus cv. Friendship at JCB, Etawah, C.S.J.M. University, Kanpur during two years. Foliar spray of 3% urea and 0.75% KH_2PO_4 applied 60 days after planting give highest length of flower stalk. The spraying of urea and KH_2PO_4 slightly increase the days to 1st flowering opening over the control. The small size of florets was recorded under control by 5.65 cm diameter against the larger obtained by spray of urea 3% to 6.90 cm diameter. As regard, the effect of KH_2PO_4 bigger florets of 6.73 cm was produce by 0.75% concentration in comparison to lower doses of KH_2PO_4 and control. The 3% urea solution increases the number of florets per stalk by 22% and KH_2PO_4 by 15% over the control.

Published in : HortFlora Research Spectrum, 7 (2) : 168-170 (June 2018)

19. Impact study on Prevention of Malnutrition in children through Amylase Rich Weaning Food

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ABSTRACT : The paper contains information on infant feeding and weaning practices in the rural communities of a semi-arid district of Rajasthan. The findings have been drawn from a recent survey of 100 rural mothers. The rural women of this area are found to believe in old deep seated beliefs and customs, which in turn deprive their infants from advantages of colostrum (87% discarded colostrum) and nutritionally rich supplements, which otherwise should be supplemented to them at any cost in order to keep them healthy. The practices of prolonged breast feeding and delayed supplementation to infants are rampant in this area. Mean age at weaning (29.1 months) again not only affects the health status of mothers and their children but also leads to the undernutrition among both. The findings of the study necessitate to evolve an exhaustive educative programme dealing with various aspects of infant feeding and weaning practices, keeping in view their traditions, so that the useful practices can be encouraged and harmful ones be prohibited.

Published in : HortFlora Research Spectrum, 7 (2) : 171-173 (June 2018)

ICV : 27.39
IBIF : 2.8

HORTFLORA RESEARCH SPECTRUM

NAAS Rating : 3.78

GIF : 0.471
PIF : 4.079

www.hortflorajournal.com

ISSN : 2250-2823

Published under the Auspices of :

Biosciences and Agriculture Advancement Society (BAAS)

"Shivalay" 98-A Somdutt Vihar, Jagrati Vihar, Garh Road, Meerut-250004

E-mail : hortfloraspectrum.india@gmail.com; submit.hortflorajournal2013@gmail.com

Journal's International Impact
Index Copernicus Value (ICV) : 27.39; Global Impact Factor (GIF) : 0.471;
InfoBase Index Factor (IBI Factor) : 2.8; New Journal Impact Factor (NJIF) : 2.14

ABSTRACTS

NAAS Rating : 3.78 www.hortflorajournal.com
HortFlora Research Spectrum, 7(3) : (September 2018) ISSN : 2250-2823

1. Genetic studies in common vegetable crops by using Biochemical and DNA Markers: A Review

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ABSTRACT : The development and utilization of biochemical and molecular markers for identification of plant genetic diversity is one of the most key development areas of vegetable crops. Various techniques are used to estimate genetic studies in vegetable crops, such as isozymes, allozymes, two-dimensional polyacrylamide gel electrophoresis (2-D PAGE) and DNA markers like amplified fragment length polymorphism (AFLP), random amplified polymorphic DNA (RAPD), restriction fragment length polymorphism (RFLP), inter-simple sequence repeat (ISSR), simple sequence repeats (SSRs), cleaved amplified polymorphic sequence (CAPS), sequence characterized amplified regions (SCAR), expressed sequence tags (ESTs), single nucleotide polymorphism (SNP), diversity arrays technology (DArT) and next generation sequencing technology (NGST). Among these techniques, some techniques have been widely used for genetic studies in vegetable crops. Today, new techniques are frequently being developed and no such techniques are ideal yet these fulfill all requirements needed by plant researchers. Each technique has its own advantages, disadvantages and limitations. This review is an attempt to discuss a basic description of different biochemical and molecular techniques with their implications in genetic studies of vegetable crops.

Published in : HortFlora Research Spectrum, 7 (3) : 177-191 (September 2018)

2. Development of *Magahi* PaAn Cultivation in Bihar: Promotional Views

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ABSTRACT : Betel vine (*Piper betle* L.) is an important horticultural crop of aesthetic and commercial values. Is is one of the important plants in the Asiatic region which ranks second to coffee and tea in terms of daily consumption. Farmers collected seasonal income from field and other crops, while betel vine cultivation produced income throughout the year from a small piece of land. By this it can reduce poverty & unemployment level and provide livelihood for the rural farmers. It has been found that the betel cultivators are facing various problems during pre and post harvesting time of betelvine cultivation like production problems, marketing problems ete. Thus an attempt has been made through this review paper to promote Magahi Pan Cultivation in Bihar from intervention of different approaches viz Government, Research and Extension approach for bringing economic prosperity of Magahi Pan Growers. farmers.

Published in : HortFlora Research Spectrum, 7 (3) : 192-198 (September 2018)

3. Effect of bioinoculants on growth and development of mango plants cv. Kesar

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ABSTRACT : A field experiment entitled "Effect of bioinnoculants on growth and development of mango plants (*Mangifera indica* L.) cv. Kesar" was conducted during the year Oct 2017- March 2018, at the Fruit Instructional Farm, Department of Fruit Science, College of Horticulture and Forestry, Jhalawar. The experiment consisted of different treatments of bioinnoculants (*Azotobacter* and PSB) and Vermicompost and was laid out in Randomized Block Design. Amongst different bioinnoculants treatments application, treatment T9 comprising bioinnoculants (*Azotobacter* 50 g per plant + PSB 50 g per plant) along with 3 kg Vermicompost per plant was found significantly superior over other treatments with respect to growth and development parameters such as per cent increase in plant height, rootstock girth, scion girth, number of shoots per plant, number of nodes per shoot in mango cv. Kesar. T_9 treatment has also given better results in enhancing the organic carbon percentage, available N, P and K content of soil status and was found significantly superior over other treatments. Like-wise, soil pH and electrical conductivity also reduced significantly under T_9 treatment over other treatments. Overall, T_9 treatment exhibited better response in terms of plant growth and development attributes and improvement in soil health indices of mango cv. Kesar plants as compared to other treatments of biofertilizers.

Published in : HortFlora Research Spectrum, 7 (3) : 199-205 (September 2018)

4. Digestibility trends of Feed Nutrients of Banana (*Musa paradisiaca*) Leaf and Stem, and Water Hyacinth (*Eichhornia crassipes*) Plants by Nylon Bag Technique

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ABSTRACT : Two fistulated male buffalo calves of 2 years age having 277 kg average body weight were selected. Dried and pulverized samples of unconventional feed viz. Banana leaf (A) and stem (B) and Water Hyacinth plant (C) along with Wheat *Bhusa* were taken in the nylon bags in the ratio of 00:100, 10:90,20:80 and 40:60 and designated as group I, II, III and IV. One type of feed was transferred in the rumen of one animal at a time. The experiments were rotated once in all the animals.The rumen pH was highest at 0h and gradually declined at post feeding hours. Bacterial count increased significantly (P< 0.01) at 4h of feeding and then it is decreased. The digestibility of all the nutrients increased (P< 0.01) at 24 h than the sample obtained at 12 h of collection in all the feeds. The digestibility of feed nutrients was higher when 10% plant samples were mixed with wheat bhusa than rest of the groups. The DM digestibility in feed B and C was significantly higher (P<0.05) in all the groups than in group A.

Published in : HortFlora Research Spectrum, 7 (4) : 206-209 (September 2018)

5. Soil nutrient Dynamics of Guava (*Psidium guajava* L.) cv. L-49 Orchards in Vertisols of Jhalawar District

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ABSTRACT : A soil survey was undertaken during October-2016 to April-2017 at the guava bearing orchards of fruit growers in Jhalawar District of Rajasthan state. Soil samples were collected from 14 orchards at different location of Jhalawar district. The studies revealed that mean soil pH values ranged between (6.27 to 8.37) among all the treatments. The minimum electrical conductivity (0.47dSm^{-1}) was estimated in treatment (T_4) at location Pirawa, Choti- Sunel ,the maximum organic carbon content (0.67 per cent) under treatment (T_8) at location Gangdhar, maximum available nitrogen content (163.81kg ha^{-1}) and DTPA extractable zinc content (1.50 mg kg^{-1}) was recorded under treatment (T_9) at Manohar- Thana, Sareri, The treatment (T_{13}) at location

Khanpur, Chand Kheri possessed maximum available phosphorous content (38.40 kg ha^{-1}) and highest DTPA extractable manganese content (62.78 mg kg^{-1}), however, the treatment (T_{10}) at Manohar- Thana, Javer observed highest value of available potassium content (407.48 kg ha^{-1}).The treatment (T_5) at Pachpahar, Khoti recorded maximum value of DTPA extractable iron content (32.56 mg kg^{-1}), while treatment (T_{14}) at Khanpur, Sarola- Kala was found having maximum DTPA extractable copper content (8.95 mg kg^{-1}).

Published in : HortFlora Research Spectrum, 7 (3) : 210-216 (September 2018)

6. Effect of liquid Feeding of Nitrogen, Phosphorus and Potash on Vegetative and Reproductive Behaviour of African Marigold cv. Double African Yellow

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ABSTRACT : Increasing interest has been observed in the use of NPK in vigour promoting substances. Experiment was conducted to study the influence of liquid feeding of NPK on vigour and flowering behaviour of African marigold c.v. Double African Yellow. Primary nutrients have immense potential to influence vegetative and reproductive phase of plant. Results of the field experiment revealed that vigour of marigold plant was significantly increased due to liquid feeding of Nitrogen, Phosphorus and Potash. The production and size of floral heads were also improved significantly by Nitrogen, Phosphorus and Potash. The liquid feeding of Nitrogen 2%, Phosphorus 2% and Potash 2% at 15, 30 and 45 days after transplanting proved significantly effective for a floriferous crop of African marigold c.v. Double African Yellow.

Published in : HortFlora Research Spectrum, 7 (3) : 217-220 (September 2018)

7. Evaluation of different varieties of Knol-Khol (*Brassica oleracea* var. *gongylodes*) in relation to Plant Spacing on Quality and B:C RATIO

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ABSTRACT : Knol-khol varieties evaluated with different plant spacing for quality and economics. Maximum length (7.17 cm) and volume of knob (219.07 cc) were reported in plant grown with a spacing of 30 cm x 30 cm. Whereas, maximum crude protein (3.54%) and organoleptic score (7.31) were found in S_2 (25 cm $\times$ 25 cm). The heightest TSS (7.50 °Brix) was bserved with Plant spacing 20 cm $\times$ 20 cm (S_1). Variety Purple Vienna (V_4) recorded maximum volume of knob and crude protein (186.36 cc and 3.24 %, respectively). Maximum TSS content (7.50 °Brix) and organoleptic score (7.10) was recorded with White Vienna (V_1) variety. Maximum B : C ratio (8.43 :1) and net returns (` 6,37,279) recorded with 20cm x 20cm spacing and White Vienna variety.

Published in : HortFlora Research Spectrum, 7 (3) : 221-224 (September 2018)

8. Effect of Seed Treatment on Seedling Vigour And Mortality of Wild Bael (*Aegle marmelos* L.)

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ABSTRACT : The experiment was conducted at the Department of Horticulture, Kulbhasker Ashram Post Graduate Collage, Allahabad, Uttar Pradesh with a view to standardize suitable stratification duration and hormone concentration for Bael seed treatment. There were seven treatment combinations (T_1 to T_{10}) including a control. Different duration of seed stratification *i.e.,* 30hours, 60 hours and 90 hours were tried along with the 100ppm, 150ppm and 200 ppm GA_3 seed treatment. Treated seeds were sown in the polythene bags (25 $\times$ 15 cm size, 200 gauge thick) containing soil, sand and FYM mixture (1:1:1). It was interesting to note that the effect of stratification duration and hormone treatment concentration was found to be significant for seed germination, transplanting success, seedling mortality percentage and rate of seed germination. Treatment T_6 (60hrs+150ppm GA_3) yielded highest percentage, (87.00) of seed germination while the lowest percentage value (39.25) was recorded in T_9 (90hrs+200ppm GA_3) treatment and the transplanting success was also lowest in T_9. The seedling mortality percentage was maximum (80.25) with T_9 where as lowest percentage value (23.00) was observed for T_6 treatment. It may be concluded that T_6 treatment can be recommended for the better stand establishment of Bael nursery.

Published in : HortFlora Research Spectrum, 7 (3) : 225-228 (September 2018)

9. A Review on Female workforce Participation in Indian Agri-Horticulture Sector

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ABSTRACT : India is one of the youngest countries in the world, with a significant segment of its 1.2 billion population in the age group of 20-35 years. A large segment of India's working women continue to be engaged in rural agri-horticultural activities. While the country is still largely an agrarian economy. Latest government statistics suggest that women's labour participation rate fell from 29.4 per cent in 2004-2005 to 22.5 per cent in 2011-2012. The gender gap in the labour force is particularly stark when we consider that in the 15-59 age group, women's participation is only 32 per cent in rural areas compared to 83 per cent for men, and 21 per cent in urban areas compared to 81 per cent for men. According to the ILO, in 2011-12. While, 62.8 per cent of women were employed in the agriculture sector. It is estimated that about 60% of all agricultural operations are handled exclusively by women. Female hourly wage rates in agriculture vary from 50 to 75% of male rates, and are too low to overcome absolute poverty. Women play a significant and crucial role in agricultural development and allied fields including in the main crop production, livestock production, horticulture, post harvest operations, agro/social forestry, fisheries, etc. The nature and extent of women's involvement in agriculture, no doubt, varies greatly from region to region. Rural Women form the most important productive work force in the economy of majority of the developing nations including India. Agriculture sector employs $4/5^{th}$ of all economically active women in the country. Women's dependence on agricultural wage labour as a source of income has also increased in the regions with the destruction of many house hold based industries employing mainly by women.

Published in : HortFlora Research Spectrum, 7 (3) : 229-233 (September 2018)

10. Boosting Cauliflower Production in Saharanpur District through Front Line Demonstration

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ABSTRACT : Cauliflower (*Brassica oleracea* L.var.*botrytis*) is one of the most important popular vegetables in Saharanpur district. Farmers of Saharanpur district mainly grow local varieties or hybrid varieties of cauliflower for good remuneration. They invest more money on seed due to which cost of cultivation become very high in comparison to return. So, open pollinated varieties (OPV) i.e. Sabour Agrim having good quality has been taken for experiment. Considering the scope of improvement in productivity through the recommended variety, 66 front line demonstrations were conducted by Krishi Vigyan Kendra, Saharanpur, Uttar Pradesh during 2012-16 in 48 different villages on farmers field. Farmers practices prevailing in the villages were treated as control for comparison with recommended variety (Sabour Agrim), followed by recommended dose of fertilizers and need based plant protection measures. The highest yield (208 q/ha) was recorded in the year 2015-16. In front line demonstration, it was 32.48 per cent more over the farmers practice (157 q/ha), however the lowest yield (190 q/ha) was recorded in the year 2012-13 under FLD and was 145.00 q/ha in farmers practice. An average yield of 200 q/ha was recorded under demonstration plots as compare to farmers practice 151.50 q/ha. The average yield of cauliflower increased 24.25 per cent more over local check. The variation in the per cent increase in the yield was found due to variation in variety, agro climatic parameters and rhizosphere environment. The economics and cost benefit ratio of both control and demonstrated plot was worked out. An average of ₹ 286500.00 was recorded net profit under recommended variety while it was ₹ 171962.50 under farmers practice variety. Cost : benefit ratio was 5.36 under demonstration, while it was 3.10 under control plots. By conducting Font Line Demonstration of proven variety, yield potential and net income from cauliflower cultivation can be enhanced to a great extent with increase in the income level of the farming community.

Published in : HortFlora Research Spectrum, 7 (3) : 234-236 (September 2018)

11. Impact of Front line Demonstrations on Onion

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ABSTRACT : The major constraints of low productivity of onion in Saharanpur district of Uttar Pradesh was non adoption of recommended package of practices and lack of awareness for new developed varieties. To replace this old age technology Krishi Vigyan Kendra, Saharanpur conducted front line demonstrations during 2012-13 and 2013-14. Cultivation practices comprised use of high yielding variety (NHRDF Red-2) at proper spacing (10 x 15cm) with recommended dose of organic as well as inorganic fertilizers and plant protection measures. Results showed that average yield obtained were 294 and 303.0 q/ha under improved system, whereas, in local variety 245 and 260.50 q/ha yield was recorded during 2012-13 2013-14 respectively. The percent increase in yield with high yielding over local varieties was 16.3 to 20 %. The extension gap recorded was 49 to 42.50 q/ha during 2012-13 and 2013-14 respectively.

Published in : HortFlora Research Spectrum, 7 (3) : 237-238 (September 2018)

12. Unsustainable Agriculture, Environmental Ethics and Ecological Balance

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ABSTRACT : Agriculture always has both positive and negative effects on environment and social issues. Unsustainable agriculture has many negative effects that cannot be continued over long period of time. The agriculture should be practiced at sustainable level. The agriculture is more or less related with environmental ethics which deals with the studies of relation of human beings and the environment. It includes a moral consideration of human approach to natural resources and believes that human as well as other living creatures as parts of society. The environmental ethics influences the ecological balance which is 'a state of dynamic equilibrium within a community of organisms in which genetic, species and ecosystem diversity remains relatively stable'. When a natural or human-caused disturbance disrupts the natural balance of an ecosystem then ecological imbalance is caused.

Published in : HortFlora Research Spectrum, 7 (3) : 239-241 (September 2018)

ICV : 27.39 | **HORTFLORA RESEARCH SPECTRUM** | GIF : 0.471
IBIF : 2.8 | NAAS Rating : 3.78 | PIF : 4.079

www.hortflorajournal.com **ISSN : 2250-2823**

Published under the Auspices of :

Biosciences and Agriculture Advancement Society (BAAS)

"Shivalay" 98-A Somdutt Vihar, Jagrati Vihar, Garh Road, Meerut-250004

E-mail : hortfloraspectrum.india@gmail.com; submit.hortflorajournal2013@gmail.com

Journal's International Impact
Index Copernicus Value (ICV) : 27.39; Global Impact Factor (GIF) : 0.471;
InfoBase Index Factor (IBI Factor) : 2.8; New Journal Impact Factor (NJIF) : 2.14

ABSTRACTS

NAAS Rating : 3.78 www.hortflorajournal.com
HortFlora Research Spectrum, 7(4) : (December 2018) ISSN : 2250-2823

1. Diseases of Important Fruit Crops caused by *Alternaria spp.* in India : A Review

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ABSTRACT : Fruits play an important role in nourishment of human being by providing different types of their products. Fruit crops are affected by a number of pathogens of different origin in which species of Alternaria, a group of fungal disease causing agents, are one of them. Twenty important fruit crops of tropical and temperate regions have been observed to suffer from 14 specie of Altrnaria which cause leaf spots and blight and also rotting of fruits in orchards and during transit and storage. Symptomatology of different types of diseases of fruit crops along with association of Alternaria spp. with them have been dealt in this review. Some species of Alternaria have been noticed to cause the disease to a particular host family, host genus on specific plant species. Based on the nature of disease and its severity, the successful management strategy can be adopted.

Published in : HortFlora Research Spectrum, 7 (4) : 245-249 (December 2018)

2. Involvement of bio-regulators in plant response to abiotic stress Mahaveer Suman* and Prerak Bhatnagar

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ABSTRACT : Abiotic factors goverens the most deleterious factor thereby having antagonotic effect on plant growth and development, resulting in drastic reduction in productivity of horticultural as well as agronomical crops. Abiotic stresses, such as drought, salinity, extreme temperatures, chemical toxicity and oxidative stress are serious threats to horticulture and result in the deterioration of the environment. Abiotic stress cause a wide range of edapho-morphological and physio-chemical changes that adversely affect the development as well as the productivity of fruit crops. Abiotic stress negatively affects the growth and development and plant response to these stresses have tremendous sitfall in the bio-molecular mechanism of horticultural crops. Bio-regulators such as auxins, brassinosteroids, polyamines, and jasmonic acid are chemical substances that have been used in horticulture with increasing incidence to modify the growth and development of plants. The stress conditions alter PGRs levels which help in plant adaptation through their responses on activities of anti-oxidant enzymes, stomatal functioning, plant water balance, nutrient allocations, and source-sink transitions. Bio-regulators are potent and action specific in alleviating the adverse effects of abiotic stress in plants. Application of Bio-regulators has been shown to be beneficial for plants in stress environments. PGRs can regulate various plant metabolic processes, modulate the production of varied osmolytes and secondary metabolites, and these help in maintaining plant-nutrients status in better condition. Hence to protect plants under abiotic stress conditions, bio-regulators command use.

Published in : HortFlora Research Spectrum, 7 (4) : 250-260 (December 2018)

3. Personal and socio-economic profile of the aonla growers

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ABSTRACT : It is the information behaviour of the farmers, which can promote and spread the results obtained in the laboratories for their better utilization in farming community. It can be concluded that majority of aonla growing farmers and farm women belonged to other backward caste and engaged both in agriculture and dairy. They had no social participation with 1.0-2.5 ha land area and medium farm power. They lived in either big or joint family, 5-10 years of farming experience and medium annual income were other characteristics. These aonla growing farmers and farm women also attainted short duration (one day) off campus training, had high innovation proneness, medium economic motivation, orientation towards competition, managed in medium manner and aonla growing farmers were educated up to middle school level, however, aonla growing farm women were illiterate.The Semi-Arid Eastern Plains Zone (IIIa) of Rajasthan has highest area and production under aonla cultivation. There are so many agricultural institutions, which are engaged in the research on aonla growers problems and transfer of technology to the aonla growers.

Published in : HortFlora Research Spectrum, 7 (4) : 261-272 (December 2018)

4. Technology transfer to farmers and its impact on their livelihood

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ABSTRACT : The present study was focused on technology transfer to farmers by Krishi Vigyan Kendra Ferozepur and their impact on self employment and up gradation of their livelihoods. Krishi Vigyan Kendra Ferozepur had conducted vocational/short term trainings for rural youth/farmers and extension functionaries on cultivation of button and dhingri mushroom, bee keeping, dairy farming, preservation of fruits and vegetable, protected vegetable cultivation. A total of 167 trainees were selected as the respondents of the trainings. The findings revealed that more than 41.31% respondents were belonging to 30-40 years age group and about 67.66 per cent respondents were educated. Halfof the respondents were belong to schedule caste families and landless. About 27.1 per cent of the trainees had training on bee keeping, 24.9 per cent on dairy farming, and 23.3 per cent on cultivation of button and dhingri mushroom, 15.0 per cent of the trainees received training on preservation of fruits and vegetable. Majority of the trainees had adopted the skillson self sustainable level/household level with highest adoption in cultivation of button and dhingri mushroom (69.0%),58% in bee keeping followed by 36.0 % in dairy farming, 20% in fruits and vegetable preservation. The number of adoption of protected vegetable cultivation was lowest but found highest adoption at commercial level. Economic impact of trainings at self sustainable level/household levelis quite visible in terms of income generation as trainees had started and adopted skills as subsidiary or main occupation.

Published in : HortFlora Research Spectrum, 7 (4) : 273-276 (December 2018)

5. Antibacterial Activity of Peel and Pulp of Green Fruits of Wild Pomegranate collected from Jammu and Kashmir

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ABSTRACT : Wild pomegranate has been widely used in traditional medicinal system. The present study was based on analyzing antibacterial activity of the methanol extract of peel and pulp of wild pomegranate collected from five different places against four bacterial strains. Highest antibacterial activity was observed from the fruit peel collected from Buddhal region against B. subtilis strain and C. jejuni strains while highest antibacterial activity was observed in the fruit pulp collected from Buddhal and Udhampur region. As compared to fruit pulp highest antibacterial activity was observed in fruit peel as it is rich in secondary metabolites. Thus wild pomegranate plant extracts can be used as a natural alternative against antibiotics.

Published in : HortFlora Research Spectrum, 7 (3) : 277-279 (December 2018)

6. Morphological and pomological characterization of Lasoda to assess the superior genotypes in South Eastern Rajasthan

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ABSTRACT : An extensive survey was conducted to identify suitable genotypes during 2012-2016 in Jhalawar and SawaiMadhopur districts in South Eastern Rajasthan. The basis of survey was to identify lasoda genotypes on the basis of fruit weight, weight of bunch, number of fruit branches/bunch, number of fruits/bunch and especially pulp: stone ratio. A total of nineteen genotypes were collected on the basis of important morphological fruit quality attributes. Survey work was accomplished during May month in forest area of Jhalawar and SawaiMadhopur district. An extensive variability in terms of morphological fruit quality attributes was recorded amongst nineteen genotypes. Fruit weight ranged from minimum 2.65 g in Asnawer, Jhalawar genotype to maximum 15.18 g in Kankar, Jhalawar genotype; weight of bunch ranged from minimum 41.50 g in Naulaon, Jhalawar genotype to maximum 175.60g in Sarolakala, Khanpur genotype; number of fruit branches/branch varied from minimum 3.25 in Golana, Jhalawar genotype to maximum 15.00 in Haripura, Jhalawar genotype; number of fruits/bunch varied from minimum 5.00 in KotlaGutti, Jhalawar genotype to maximum 18.00 in Govardhanpura, Asnawer, Jhalawar and Sarolakala, Khanpur genotype however pulp: stone ratio ranged between 2.24 in Govardhanpura, Jhalawar to 9.64 in Kotlagutti, Jhalawar genotype. Fruit weight also exhibited positive correlation with number of fruit branches/branch (r = 0.162*), however it bore negative and non significant correlation with number of fruits/bunch (r = -0.219) as well as with pulp: stone ratio having correlation value of (r = 0.072). The dendrogram analysis revealed 92% dominance of fruit weight attribute and 4.5% dominance of bunch weight character.Dendrogram revealed significant phenotypic diversity and linkage among lasoda genotypes on the basis of phenotypic attributes. Significant differences were observed in the majority of attributes amongst lasoda genotypes. In addition, the studied genotypes may be recognized as representative gene pools of natural population. Fruit weight was positively correlated with pulp:stone ratio. In conclusion, ten genotypes (T_4, T_1, T_2, T_6, T_3, T_5, T_7, T_{14} and T_{10}) showed high values in terms of fruit quality traits especially in terms of pulp: stone ratio and may be useful for developing cultivars with high yield potential.

Published in : HortFlora Research Spectrum, 7 (4) : 280-285 (December 2018)

7. Evaluation of Antimicrobial activity of Various Extracts of *Viola odorata* L.

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ABSTRACT : *Viola odorata* L. is an important medicinal plant with antioxidant, anti-inflammatory, antibacterial, antifungal and anticancerous activities. The present study was carried out to evaluate the antimicrobial potential of acetone, ethanol, methanol and ethyl acetate extracts of *V. odorata* against five bacterial strains (*Bacillus subtilis, Micrococcus luteus, Bacillus cereus, Klebsiella pneumonia* and *Escherichia coli*) by the agar diffusion method and two fungal strains (*Bipolarisspecifera* and *Fusariumsolani*) by poisoned food technique. The results revealed that the ethanol extract was the most effective against the tested pathogens and thus *V. odorata* can be used as a potential source for the development of drugs.

Published in : HortFlora Research Spectrum, 7 (4) : 286-290 (December 2018)

8. Studies on Plant growth and Quality in African Marigold (*Tagetes erecta* L.) by the Application of Plant Growth Regulators and Pinching

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ABSTRACT : The field experiment on plant growth and flower yield in African marigold (*Tagetes erecta* L.) by the application of plant growth regulators and pinchingwas carried out at Department of Horticulture, Faculty of

Agriculture, Annamalai University, and Tamil Nadu during the period 2012-2013. The present investigation was laid out in Factorial Randomized Block Design (FRBD) replicated thrice with 14 treatments. Two F_1 hybrids namely Gold Benz tall (V1) and Maxima yellow (V_2) were taken for the study comprising GA_3 @ 50, 100 and 150 ppm, NAA @ 50, 100 and 150ppm,MH @ 250, 500 and 750 ppm, Alar @ 200, 400 and 600 ppm and pinching with untreated control. The growth and quality characters were observed its superiority in Gold Benz tall with the combination of foliar spray of GA_3 @ 150 ppm except number of laterals and number of flowers were registered Maxima yellow with the foliar spray of GA_3 @ 150 ppm.

Published in : HortFlora Research Spectrum, 7 (4) : 291-295 (December 2018)

9. Association of *Alternaria spp.* With Medicinal Plants

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ABSTRACT : Twenty two medicinal plants have been observed to be affected from nine species of *Alternaria* of various nature. *Alternaria alternata,* a plurivorous fungus, of wide spread occurrence infected almost all the medicinal plants except only three of them. Three distinct species of *Alternaria* are involved in causation of three different types of diseases in Datura. Species of *Alternaria* like *A. crassa, A. papevris, A. panax* and *A. longipes* specifically are found to be associated with their respective hosts only. *Alternaria solani* is the species restricted only ot infect the host plants of family Solanaceae proved true to cause the leaf spot diseases in Sarpgandha (*Rauwolfia serpentina*), tomatilo (*Solanum khasianum*) and Ashwagandha (*Withania somnifera*). *A. tenuissima* was found associated with four medicinal hosts.

Published in : HortFlora Research Spectrum, 7 (4) : 296-301 (December 2018)

10. A Review on effect of Soil Amendments with Organic Composting on the Yield of Capsicum (*Capsicum annuum* L.)

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ABSTRACT : In the recent years, the most important problem faced by the world is to produce good quality and quantity food to meet the demands of increasing population. Hence, fertilizers, or pesticides along with genetically engineered varieties are being used to enhance the yield and productivity. This combination has helped to develop a food supply but soil health, pesticide toxicity, environmental pollution, and sustainability of agricultural production became a big concern. In this concern organic farming has emerged as a promising alternative with safe and good effects on food quality and environment. A variety of substances are used as raw material for this purpose. Present article reviews the use of organic waste especially green waste as a fertility component of soil thereby increasing growth and production of *Capsicum annum* L.

Published in : HortFlora Research Spectrum, 7 (4) : 302-305 (December 2018)

11. Influence of Fertility levels and Bio fertilizers on the Yield of Fenugreek (*Trigonella-foenum-graecum* L.)

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ABSTRACT : A field experiment was conducted during the winter (Rabi) season at Bulandshahr, Uttar Pradesh, under Centrally sponsored scheme (NHM) Ministry of Agriculture, GOI, Calicut, Kerala to assess the response of fenugreek (*Trigonella foenum-graecum* L.) to fertility levels and biofertilizers. Three fertility levels [50, 75 and 100% recommended dose of fertilizers (RDF) : 40 kg N + 40 kg P_2O_5 + 10 kg S/ha)] in main plots and 3 bio-fertilizer inoculations [*Rhizobium*, phosphate-solubilizing bacteria (PSB) and *Rhizobium* + PSB] in subplots were studied in split-plot design with 3 replications. Significantly the highest values of growth parameters,

nodules/plant, yield attributes, seed yield (2.25 t/ha) and haulm yield (5.25 t/ha), were recorded with application of 100%RDF over lower fertility levels. Dual inoculation of seed with *Rhizobium* + PSB resulted higher growth, nodules/plant, yield attributes and seed yield (2.10 t/ha) over their sole application. Interaction of fertility levels and bio-fertilizers was also found significant in yield attributes and in seed yield also. Application of 100% RDF + dual inoculation, being at par with 75% RDF + dual inoculation, gave the highest seed yield (2,287 kg/ha).The integration of 75% RDF with dual inoculation in respect of yield attributes and seed yield were recorded significantly higher.

Published in : HortFlora Research Spectrum, 7 (4) : 306-309 (December 2018)

12. Baobab Tree : A Religious Multipurpose Tree

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ABSTRACT : *Adansonia digitata* L. is commonly known as Baobab tree and native to Africa .It is multipurpose tree which provides foods,clothing and medicine. The raw materials of the same are obtained from Baobab tree.The fruit pulp,seeds,leaves, roots, flowers and bark of Baobab tree are edible.It is a rich source of vitamin C, calcium, potassium, phosphorous, carbohydrates,proteins and lipids.The tree has numerous medicinal properties including anti-inflammatory activities.It is a shady and ornamental tree found in Medagascar, Africa,India and Australia.It is propagated by seed

Published in : HortFlora Research Spectrum, 7 (4) : 310-311 (December 2018)

ICV : 27.39 | **HORTFLORA RESEARCH SPECTRUM** | GIF : 0.471
IBIF : 2.8 | NAAS Rating : 3.78 | PIF : 4.079

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Biosciences and Agriculture Advancement Society (BAAS)

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HortFlora Research Spectrum

Quarterly

Published under the Auspices of

BIOSCIENCES & AGRICULTURE ADVANCEMENT SOCIETY (BAAS), Meerut (Regd.)

ISSN : 2250-2823 'Shivalay' 98-A, Somdutt Vihar, Garh Road, Meerut-250 004 (U.P.) India Regd.

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HortFlora Research Spectrum

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Printed at : New Rishabh Offset Printers, Delhi Road, Meerut.

ISSN 2250-2823
9 772250 282000